

IN THE CLAIMS:

1. – 9. (Canceled)

10. (Currently Amended) A vertical field type MRI apparatus for forming magnetic resonance images, including:

at least one first field generating superconducting coil system for producing a substantially homogeneous magnetic field in an imaging volume of the apparatus, which coil system includes:

a round outer coil arranged in an outer coil plane; and

a round supplementary coil arranged within the outer coil, wherein the energizing of the outer coil and of the supplementary coil generates magnetic fields of opposite direction, wherein the supplementary coil is located in the outer coil plane, and wherein the ratio D_a/D_o of the diameter D_a of the supplementary coil to the diameter D_o of the outer coil is between 0.7 and 0.9; and

a second field generating superconducting coil system for producing the substantially homogeneous magnetic field in the imaging volume of the apparatus, which second coil system includes:

a second round outer coil arranged in a second outer coil plane and having a diameter that is larger than the diameter of the first outer coil, and

a second round supplementary coil arranged within the second outer coil and in the second outer coil plane, wherein the energizing of the second outer coil and of the second supplementary coil generates magnetic fields of opposite direction.

11. (Currently Amended) The apparatus as set forth in claim 10, wherein the apparatus comprises, corresponding to the at least one first field generating superconducting coil system, at least one second field generating superconducting coil system, said apparatus further comprising, respectively, at least one first gradient coil system and, respectively, at least one second gradient coil system, wherein each of the gradient coil systems includes a flat main gradient coil and a shielding coil, and wherein each of the at least one first gradient coil systems is being arranged in a space

within a respective one of said first field generating superconducting coil systems, and each of the at least one second gradient coil systems being is arranged in a space within a respective one of the at least one second field generating superconducting coil systems.

12. (Previously Presented) A vertical field type MRI apparatus for forming magnetic resonance images, including;

at least one first field generating superconducting coil system for producing a substantially homogeneous magnetic field in an imaging volume of the apparatus, which coil system includes:

a round outer coil arranged in an outer coil plane; and

a round supplementary coil arranged within the outer coil, wherein the energizing of the outer coil and of the supplementary coil generates magnetic fields of opposite direction, wherein the supplementary coil is located in the outer coil plane, and wherein the ratio D_a/D_o of the diameter D_a of the supplementary coil to the diameter D_o of the outer coil is between 0.7 and 0.9; and

a second field generating superconducting coil system for producing the substantially homogeneous magnetic field in the imaging volume of the apparatus, which second coil system includes:

a second round outer coil arranged in a second outer coil plane and having a diameter that is larger than the diameter of the first outer coil,

a second round supplementary coil arranged within the second outer coil and in the second outer coil plane wherein the energizing of the second outer coil and of the second supplementary coil generates magnetic fields of opposite direction, and further including a first and a second container for the first and the second field generating superconducting coil systems, respectively, said containers being arranged to contain a cryogenic medium and communicating with one another in order to exchange the cryogenic medium, one of the containers being provided with a pressure connection for controlling the pressure in the containers as desired.